

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/IB2005/002828

International filing date (day/month/year)
04.08.2005

Priority date (day/month/year)
19.08.2004

International Patent Classification (IPC) or both national classification and IPC
F01L9/04

Applicant
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1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2005/002828

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/B2005/002828

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|-------------|-----|
| Novelty (N) | Yes: Claims | 1-9 |
| | No: Claims | |
| Inventive step (IS) | Yes: Claims | 1-9 |
| | No: Claims | |
| Industrial applicability (IA) | Yes: Claims | 1-9 |
| | No: Claims | |

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/IB2005/002828

Re Item V.

1 Reference is made to the following documents:

D1 : DE 199 55 054 A1 (LEIBER, HEINZ) 17 August 2000 (2000-08-17)

D2 : PATENT ABSTRACTS OF JAPAN vol. 2000, no. 08, 6 October 2000
(2000-10-06) & JP 2000 130123 A (DENSO CORP), 9 May 2000 (2000-05-09)

- 2.1 To claim 1: Document D1, which is considered to represent the most relevant state of the art, discloses *(the references in parentheses applying to this document)* an electromagnetically driven valve (6) which includes a drive valve (6) that is provided with a valve stem and that reciprocates in a direction in which the valve stem extends, and which operates by using both an electromagnetic force *(from electromagnet 8)* and an elastic force *(caused by torsion spring 16)* in that a first oscillating member *(1c, 17)* and a second oscillating member *(1e)* each of which can oscillate by using a predetermined point in a base member *(the cylinder head)* as a supporting point, each of which is movably connected to the valve stem *(12)* at a first end *(the right ends in the figures 8a to 8d)* and is movably supported by the base member at a second end *(the left ends in the figures 8a to 8d)* and which are provided at a predetermined distance from each other, an electromagnet *(72, 73, 100, 101)* which includes a coil *(9, 10, 13d, 13e)* and a detection portion *(27)* which detects a position of the first oscillating member *(1c)*.

Document D1 does not show that:

- the electromagnet is provided between the first oscillating member and the second oscillating member,
- the electromagnetic force is applied to the first oscillating member and the second oscillating member when an electric current passes through the coil and
- an amount of electric current that passes through the coil is determined based on the position detected by the detection portion.

In view of these differences, the subject-matter of the first claim is new (Article 33(2)PCT).

Document D2 shows a detection portion but it does not mention anything about the hinged first and second oscillatory members. Document D1 shows these hinged first and second oscillatory members and it also shows electromagnets; but it does not explicitly mention that in the configuration of the figures 8a to 8d, an electromagnet is positioned between the parts 1e and 17. If a man skilled in the art has to construct the configuration of the figures 8a to 8e, he could put one of the electromagnets between the two oscillatory members 1e and 17, but he would not apply an electromagnetic force to oscillatory member 1e without being inventive. The reason therefore is, that with the type of electromagnets as used in document D1, the construction complexity would increase drastically, what on its turn would involve a lot of construction and design efforts.

Thus, the subject-matter of claim 1 is not only new but also inventive (Article 33(3)PCT).

- 2.2 Claims 2-9 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

Re Item VII.

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.